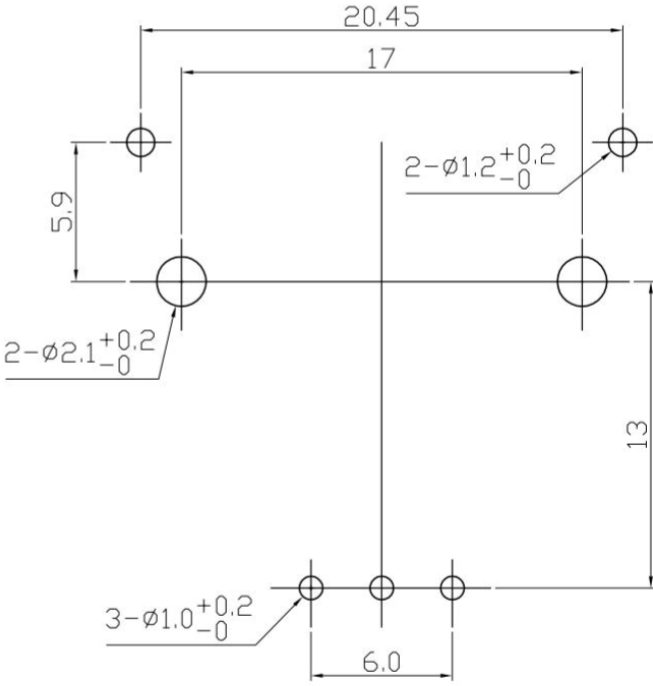
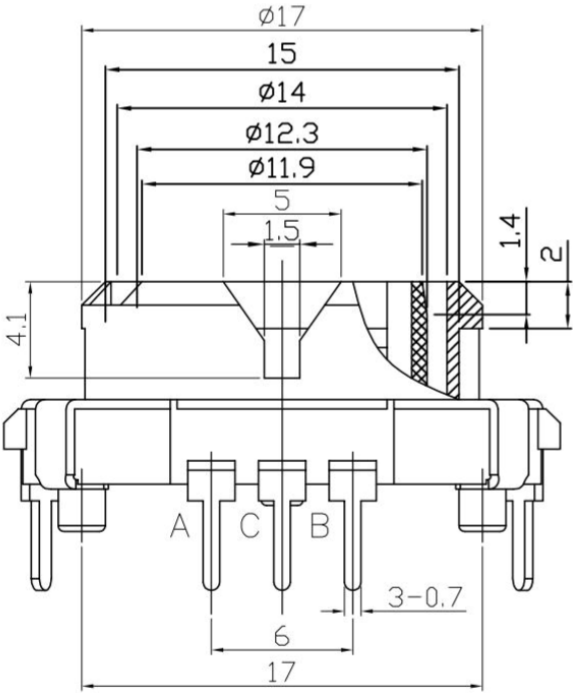
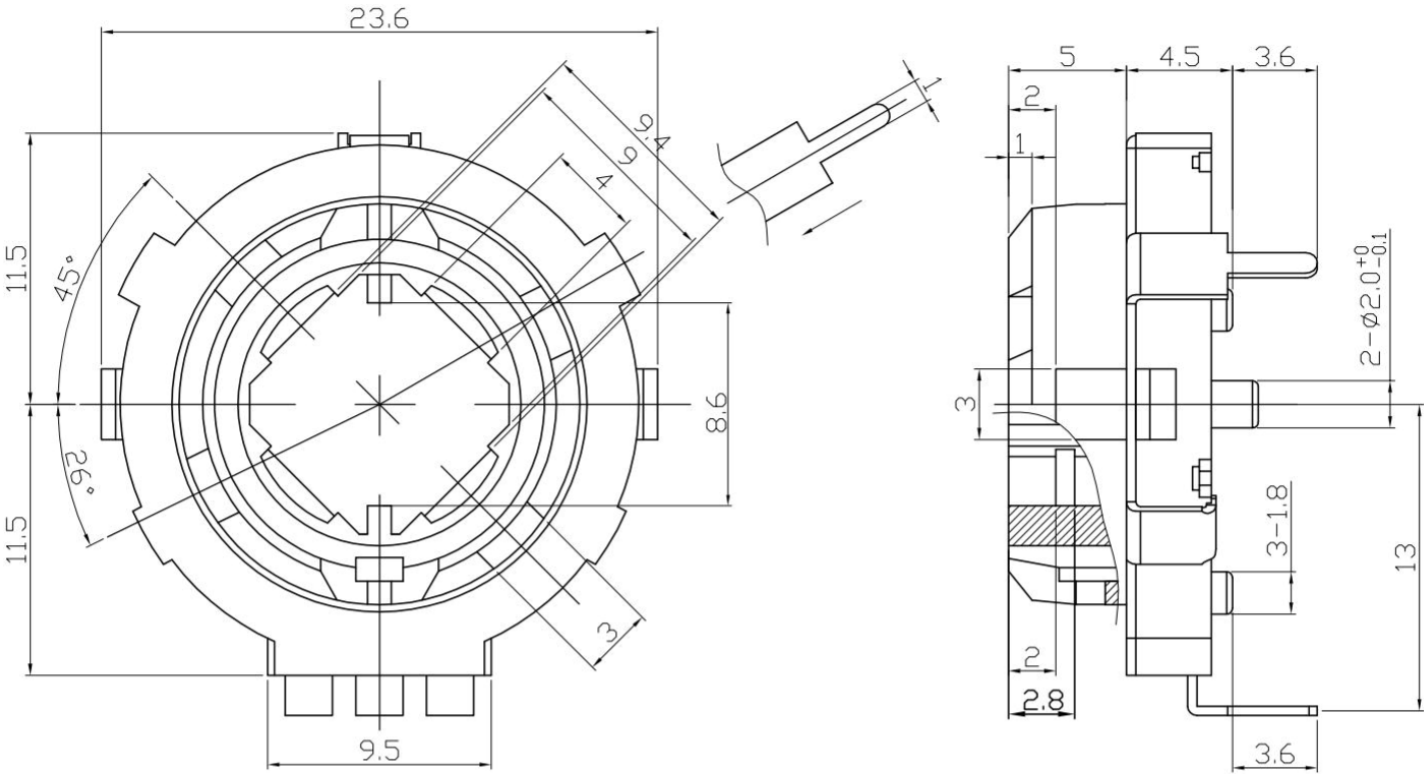


外形图 MECHANICAL DIMENSIONS



P.C.B. MOUNTING DETAIL

KH-EC251V202000			TOL. UNLESS OTHERWISE SPEC.		ISSU.	DATE	REVISION
			BASIC DIMENSIONS	TOL.	00		ORIGINAL DRAWING
			L ≤ 10	± 0.3	01		
	SCALE	UNIT	10 < L	± 0.5	02		
	3:1	mm	100 ≤ L	± 0.8	03		
			ANGLE	± 5°	04		
深圳市金航标电子有限公司					DSGD Z. J	CHKD F. Q	APPD

EC25 SERIES SPECIFICATION
EC25系列规格书

1. 一般事项General

1-1 适用规格 Scope

本规格书适用于微小电流回路的电子设备，属25型回转型编码器。

This specification applies to 25mm size low-profile rotary encoder(incremental type) for microscopic current circuits , used in electronic equipment.

1-2 标准状态Standard atmospheric conditions

除另有规定外，测量应在以下状态下进行：

Unless otherwise specified ,the standard range of atmospheric conditions for making measurements and test is as following limits :

温 度 Ambient temperature : 15℃ to 35℃

相对湿度 Relative humidity : 25% to 85%

气 压 Air pressure :86kpa to 106kpa

1-3 使用温度范围

Operating temperature range : -40℃ to+80℃

1-4 保存温度范围

Storage temperature range : -40℃ to+85℃

2. 构造 Construction

2-1 尺寸 Dimensions

见所附成品图 Refer to attached drawing

3. 额定值 Rating

3-1 额定电压

Rated voltage:DC 5V

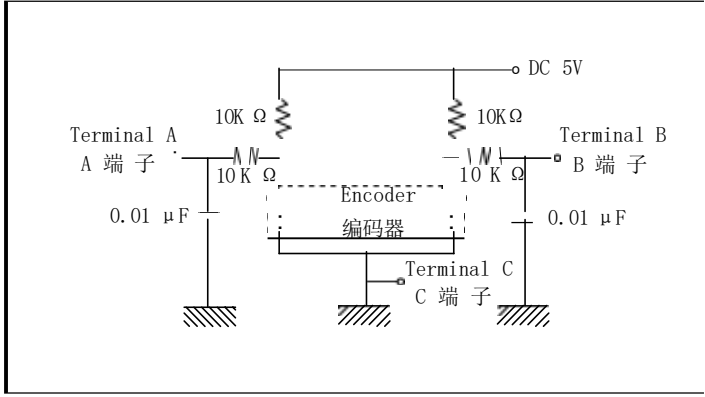


图1 (fig.1)

4. Application Notes 使用上的事项

4-1、避免储藏于高温、潮湿及腐蚀的场所. 产品购入后尽可能在6个月内使用完. 拆包装后未使用完的剩余产品需储藏于防潮防毒的环境下.

Avoid storing the products in a place at high temperature,high humidity and in Corrosive gases.Please use this product as soon as possible with 6 months limitation.If any remainder left after packing is opened,please store it with proper moistureproofing,gasproofing etc.

4-2、编码器信号的计算方法应将操作的速度,信号的取样时间及电子回路中的微电脑软体等考虑进去.

The encoder pulses count method should be designed with taking operating speed,sampling time and design of the microcomputer software into cosideration.

4-3、此产品在定位点的输出波形参照（5-1）,因此在设计软体时请留意其状态.

With this products the detent position output consult fig.5-1.Therefore make the A phase the reference at the soft ware design stage.

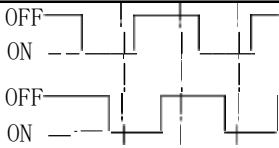
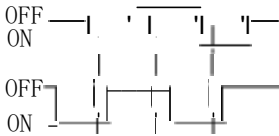
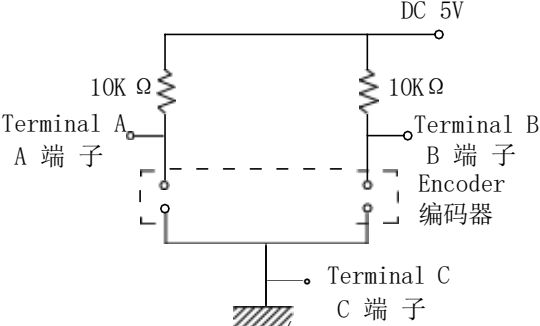
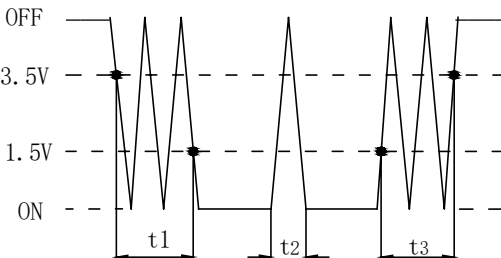
4-4、在设计时要考虑到杂讯,建议使用C/R滤波电路,（图1）

At design of the pulse count process.Using the C/R filter circuit is Recommended. (fig .1)

4-5、本产品请勿碰触到水,可能会导致输出波形的异常.

Care must be taken not to expose this product to water or dew to prevent possible problem in pluses output waveform.

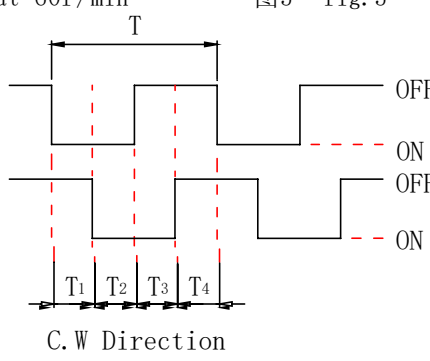
EC25 SERIES SPECIFICATION
EC25系列规格书

5. 电气性能 ELECTRICAL CHARACTERISTICS			
项目 ITEM	条件 CONDITIONS		规格 SPECIFICATIONS
5-1. 输出信号 Output signal format	A、B两信号输出相位差，输出波形详细见（图2）（虚线表示带卡点装置的上擎子处位置） 2 Phase-different signals (signal A, signal B) Details shown in <fig. 2> (The broken line shows detent position.)		
	轴回转方向 Shaft rotational direction	信号 Signal	输出波形 Output 图2 fig. 2
	逆时针方向 C. C. W	(A-C端子间) A(Terminal A-C) B(B-C端子间) B(Terminal B-C)	
	顺时针方向 C. W	A(A-C端子间) A(Terminal A-C) B(B-C端子间) B(Terminal B-C)	
5-2. 分解能力 Resolution	回转360° 的输出脉冲数. Number of pulses in 360° rotation.		10 个脉冲/360°(图2) 10 pulses/360° (fig2) for each phase 2个定位点，1个脉冲 2Click 1Pulse
5-3. 开关特性 Switching characteristics	下（图3）所示回路，轴以360° /S的速度转动测定。 Measurement shall be made under the condition as follows. Shaft rotational speed : 360° /S Test circuit : (fig.3) 图3 <fig. 3>  图4 <fig. 4>  (注) 编码OFF指输出电压3.5V以上的状态 (fig. 4). Code-OFF area :The area which the voltage is 3.5V or more(fig. 4). 编码ON指输出电压1.5V以下的状态fig. 4). Code-ON area : The area which the voltage is 1.5V or less(fig. 4).		
5-3-1. 振荡 Chattering	编码从OFF→ON或ON→OFF时，输出1.5V～3.5V的通过时间应符合规定。 Specified by the signal's passage time from 1.5V to 3.5V of each switching position(code OFF~ON or ON~OFF)		t1, t3 ≤5ms
5-3-2. 滑动杂音 (突跳) Sliding noise (Bounce)	编码ON部份的1.5V以上的电压变动时间在振荡t1, t3之间会产生1ms以上, 1.5V以下的ON部份. 另外, 如果各突跳间1.5V以下的范围在1ms以上时, 则判定为另一个突跳. Specified by the time of voltage change exceed 1.5V in code-ON area . When the bounce has code-ON time less than 1ms between chattering (t1 or t3). the voltage change shall be regarded as a part of chattering. When the code-ON time between 2 bounces is less than 1ms. they are regarded as 1 linked bounce.		t2≤5ms
5-3-3. 滑动噪音 Sliding noise	编码OFF部份的电压变动。 The voltage change in code-OFF area.		3.5V以上 3.5Vmin

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5. 电气性能 ELECTRICAL CHARACTERISTICS		
项目 ITEM	条件 CONDITIONS	规格 SPECIFICATIONS
5-4 相差位 Phase difference	下（图5）所示回路，轴以$360^{\circ}/S$的速度转动测定。 Measurement shall be made under the condition which the shaft is rotated at 60r/min 图5 fig.5  A信号(A~C间) signal A B 信号(B~C间) signal B C.W Direction	$T_1、T_2、T_3、T_4 \geq 5\text{ms}$ 见图5 (fig.5)
5-5. 绝缘阻抗 Insulation resistance	在端子和轴间施加电压 250V DC。 Measurement shall be made under the condition which a voltage of 250V DC is applied between individual terminals and bushing	100MΩ 以上 100MΩ Min
5-6. 耐电压 Dielectric strength	在端子和轴间施加AC300V电压1分钟 A voltage of 300V AC shall be applied for 1 minute between individual terminals and bushing	不得有绝缘破坏 Without arcing or breakdown.
6 机械性能 Mechanical characteristics		
6-1. 全回转角度 Total rotational angle		360°（无止档点） 360°（Endless）
6-2. 定位点力矩 Detent torque	只适用于附卡点装置 Onlt suitable for C.C,equipment.	40~100gf.cm
6-3. 定位点数及 位置 Number and position of detent	只适用于附卡点装置 Onlt suitable for C.C,equipment.	20detents(Step angle:$18^{\circ} \pm 2^{\circ}$) 20点定位(间隔角度$18^{\circ} \pm 2^{\circ}$)
6-4. 轴的推拉强度 Push-pull stren- gth of shaft	在轴端,沿轴向施加 10Kg 的静负荷力推和拉各10秒钟 (产品焊锡固定在PCB上。) Push and pull static load of 10Kg shall be applied to the shaft in the axial direction for 10s. (After soldering of the PC board)	轴无破损, 接触性能无异常 Without damage or excessive play in shaft no excessive abnormality in rotational feeling
6-5. 轴摆动 Shaft wobble	在轴前端2mm瞬间施加200gf.cm的力, 适用于轴的弯曲强度。 Bending moment of 200gf.cm to be applied to the shaft at 2mm from the top of shaft.	0.2mmp-p以下 less 寿命试验后: 0.3mmp-p 以下 After endurance life less than 0.3mmp-p.

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7 耐久性能 ENDURANCE CHARACTERISTICS					
项目 ITEM	条件 CONDITIONS			规格 SPECIFICATIONS	
7-1. 回转寿命 Rotational life	在无负荷条件下轴以600~1000周/小时速度回转30000周。 The shaft of encoder shall be rotated to 30000 cycles at a speed of 600~1000 cycles/H without electrical load, after with measurements shall be made.			定位力度相对初期值: +10/-30% 其它项目应满足初期规格。 Detent torque:Relative to the previously specified value +10/+30%. Except above items, specitications in clause 5.1~6 and 6.1,6.3 shall be satistied.	
7-2. 耐湿性 Damp heat	温度40±2℃, 湿度90~95%的恒温恒湿槽中放置96±4小时后, 在常温、常湿中放置1.5小时后测试。 The encoder shall be stored at temperature of 40±2℃ with relative humidity of 90% to95% for96±4H in a thermostatic chamber.And the encoder shall be subjected to standard atmospheric conditions for 1.5H, After which measurements shall be made.			所有项应满足初期规格 Specifications in clause all items is shall be satisfied.	
7-3. 耐热性 Dry heat	温度80±3℃的恒温箱中放置96±4小时, 常温、常湿放置1.5小时后测试。 The encoder shall be stored at a temperature of 80±3℃ for 96±4H in a thermostatic chamber. And then the encoder shall be subjected to standard atmospheric conditions for 1.5H, After which measurements shall be made.			所有项应满足初期规格 Specifications in clause all items is shall be satisfied.	
7-4. 低温特性 Cold	温度-25±3℃的恒温箱中放置96±4小时, 常温、常湿放置1.5小时后测试。 The encoder shall be stored at a temperature of -25±3℃ for 96±4H in a thermostatic chamber. And then the encoder shall be subjected to standard atmospheric conditions for 1.5H. After which measurements shall be made.			所有项应满足初期规格 Specifications in clause all items is shall be satisfied.	
7-5. 焊锡性 Solder ability	端子在260℃±5℃温度的焊锡槽内浸锡3秒±0.5秒。 The terminals shall be immersed into solder bath at 260℃ for 3s±0.5s in the same manner as para.			浸渍面须有75%以上焊锡附着 A new uniform coating of solder shall cover 75% minimum of the surface being immersed.	
7-6. 耐焊接热 Resistance to Soldering heat	手工焊接.Manual soldering 温度350℃以下, 时间3秒以内。 Bit temperature of soldering iron:350℃ less than Application time of soldering iron:within 3s 槽焊.Dip soldering. 使用基板:t=1.6mm的单面覆铜板。 Printed wiring board:single-sided copper clad laminate board with thickness of 1.6mm. 预热:基板表面温度100℃, 时间2分钟以内。 Preheating:1. Surface temperature of board:100℃. 2. Preheating time:within 1 min. 焊接:温度260±5℃或以下, 时间3~5秒以内。 Soldering:Solder temperature:260±5℃ or less Immersion time:within 3~5S			不得有绝缘体的破损、变形、接触无异常。 Electrical characteristics shall be satisfied No mechanical abnormality.	
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